

MEMORANDUM

State of Alaska

Department of Fish and Game
Westward Region Office

TO: Nick Sagalkin
Fishery Biologist IV

DATE: April 30, 2013

PHONE NO: 907-486-1848

FROM: Heather Finkle
Fishery Biologist III

SUBJECT: Upper Station sockeye salmon
grab sampling operational plan

Recent low returns of Upper Station sockeye salmon have generated substantial concern from Alitak Bay fishermen. In response to this concern, and with support from the Kodiak Regional Aquaculture Association, the Alaska Department of Fish & Game (ADF&G) initiated an analysis to identify data gaps pertinent to explaining the declining runs. As one result of this process, ADF&G will be initiating a juvenile sockeye salmon grab sampling project in May 2013 as an initial investigation into factors that may be affecting adult returns. This memorandum serves as an outline for the sampling protocol for this project.

GOAL

The project goal is to assess the age, size, and condition of sockeye salmon smolt outmigrating from the South Olga lakes to attain a better understanding of lake productivity and health of the system and its inhabitants. These data will provide insight into what further studies may benefit our understanding of Upper Station sockeye salmon productivity.

OBJECTIVES

To achieve the project goal, project personnel will collect data to

1. Estimate average age, weight, length, (AWL) and condition factor of sockeye salmon smolt outmigrants from the South Olga lakes.

TASKS

1. Install and operate a fyke net to capture emigrating sockeye salmon smolt.
2. Enumerate catch by species.
3. Collect physical data daily: air temperature, water temperature, water level, cloud coverage, wind direction and velocity, and precipitation.
4. Conduct weekly random sampling of 120 sockeye salmon smolt for age (scale samples), weight, and length.

PROJECT PERSONNEL

Project Biologists: *Heather Finkle* – Principal Investigator – Westward Region Finfish Research Biologist (Fishery Biologist III)

Mary Beth Loewen – Field Project Leader – Westward Region Finfish Research Biologist (Fishery Biologist II)

Matt Keyes— Field Project Leader –Kodiak Assistant Area Management Biologist (Fishery Biologist II)

Field Staff: *vacant* – ADF&G Fish and Wildlife Technician III
vacant – ADF&G Fish and Wildlife Technician II

The principal investigator oversees the project, provides logistical and technical assistance, and writes annual and final reports with the assistance of other project biologists. The co-investigator will assist in report writing and supervise field crew sampling. The field project leader will coordinate day to day samples and assist with various aspects of the project as needed. Field staff will implement the ADF&G safety guidelines and ensure daily operations are conducted.

TIMING OF SAMPLING

Because of smolt outmigration and adult run timing and the deployment of the ADF&G Upper Station weir crew, the weir crew will conduct the sampling of juvenile sockeye salmon with the help of ADF&G research staff approximately between May 20 and July 5. Duration of the sampling season may be shortened or extended based on outmigration timing and run dynamics.

FYKE NET INSTALLATION, MONITORING, AND MAINTENANCE

Smolt may migrate at night, therefore a single sampling day will be the 24-hour period from noon of the first day to noon the following day and is identified by the calendar date corresponding to the first noon. The fyke net should be fished 3 times per week during evening hours. The fyke net will be fished downstream of the lower lake; the exact location will be determined inseason as river conditions dictate the best sites for smolt capture. The weekly frequency and evening duration of fishing events may vary based on sampling conditions.

The net will be set with the wings extending at 45-degree angles upstream from the net (Figure 1). A diagram of the net and the surrounding area will be drawn in a field notebook to



Figure 1. Example of a fyke net properly deployed and fishing.

correspond with a recorded GPS location. The net will be monitored at least every two hours; if large catches or excessive debris accumulate, the net will be monitored more frequently to avoid fish mortality or trap displacement. Smolt behavior should be monitored as they approach and enter the mouth of the net to qualitatively assess possible avoidance. This is easily done using LED headlamps.

The fyke net will

- Be kept free of debris to minimize smolt mortality.
- Require frequent monitoring and maintenance to ensure that they are working properly.
- Be fished following the sampling rules lined out in this operational plan from ~20 May until ~5 July. Attention to changes in migration patterns should be monitored and recorded as it may be necessary to fish the fyke net more frequently than outlined in this Operational Plan to assess multiple site locations or ensure catches meet the weekly sampling goals.
- Be modified or pulled from the water if conditions become dangerous or loss of equipment may occur. If this action is necessary, the project biologist should be notified as soon as possible.

The fyke net should be fished until a minimum of 40 juvenile sockeye salmon have been caught, then removed from the water. If the fyke net becomes dislodged or unable to capture fish while deployed, the fyke net should be reset as soon as circumstances allow.

SMOLT CATCH AND SPECIES ENUMERATION

Handling of smolt should be done very carefully as smolt are sensitive to stress, and mortality can easily occur. To collect the smolt caught in the fyke net, use a dip net to transfer the contents of the net's cod end into a 5-gallon bucket filled with river water. The fish in the 5-gallon buckets should be identified (Appendix A) and counted by species. A tally denominator should be used to enumerate the trap's catch to ensure accurate counts. Sockeye salmon should be moved from the bucket to the covered live box for sampling. Other species caught in the net should be released downstream of the trap. Weather and river condition data should be recorded following each time catch is reported.

All data should be entered on the *Catch, River and Weather Reporting Form* (Figure 2) daily. Appendix A provides color pictures and taxonomic keys for species identification. Contact the project biologist if any questions regarding identification occur.

SMOLT AGE, WEIGHT, AND LENGTH SAMPLING (AWL)

Smolt sampling for age, weight, and length data will be conducted for a period of 7 weeks (strata) as outlined in Appendix B1: Strata 1 (May 20–23), Strata 2 (May 24–May 30), Strata 3 (May 31–June 6), Strata 4 (June 7–June 13), Strata 5 (June 14–June 20), Strata 6 (June 21–June 27), and Strata 7 (June 28–July 4).

A total of 40 fish will be collected from each time the fyke net is fished. If less than 40 smolt are caught in a sampling day and the net has fished unhindered, the sample size for that day will be the number of fish caught. The length and weight information for individuals will be recorded in a Rite-in-the-Rain notebook and a rugged digital assistant data logger (RDA).

CATCH, RIVER AND WEATHER REPORTING FORM

West Bank Canadian Fyke Net
Project: Karluk Sockeye Salmon Smolt Study

Page: _____ of _____

	Catches							River		Wx	Comments ²
Date ¹	Sockeye	Coho	Dolly Varden	Stickle back	Sculpin	Rainbow	Other	Level (cm)	Temp. °C	Air temp, Cloud Cover, Wind	

1 Each date covers a 24-hour period extending from noon to noon and is identified by the first noon starting date
2 To be included in comments: problems, observations, etc.

Figure 2.— Example of a Catch, River, and Weather Reporting Form.

The standard procedures for collecting and recording salmon AWL data are defined in Appendix B. Data recording will be accomplished using an RDA. Appendix B will serve as the standard.

All scales should be collected from the preferred area of each fish (Appendix B2) following the methods described by International North Pacific Fish Commission (1963). Scales should be mounted on microscope slides (Appendix B2). Age determination will be made by project biologists in the office by examining scales for annual growth increments using a microfiche reader fitted with a 48X lens following designation criteria established by Mosher (1968). The most common method of age determination in Pacific salmon is the analysis of the concentric rings (circuli) on the scale and is the method to be used by this study. Fast summer growth results in wide spacing between circuli, whereas slow winter growth results in closer spaced circuli; age is determined by enumerating the number of winters observed on the scale (Gilbert 1913). This method of age determination is ideal because the scale can be collected, processed, and aged quite rapidly.

Smolt should be measured to the nearest mm from the tip of the snout to the tail fork (Appendix B2). Excess water should be removed from the smolt before weighing by using a paper towel as a blotter, and individual smolt weight should be measured to the nearest 0.1 g. A scalpel should be used to remove 5–10 scales from the preferred area of the fish (Appendix B2). The scales should be mounted on a glass microscope slide as shown in Appendix B2. Scales from five fish should be mounted on each slide. The left portion of each slide should be labeled with slide number, sample location, species, date, and inclusive fish numbers that correspond to information entered in to the RDA (Appendix B2). After sampling, the fish should be moved to an aerated recovery bucket and held until all smolt are swimming normally. Both the recovery and pre-sampling holding buckets should be covered to minimize stress on the fish. Smolt should be released downstream of the fyke net after all fish are swimming normally in the recovery bucket.

Common mistakes to avoid include:

1. Poorly mounted scales – Too many scales in a smear or slime and debris present when mounting. The rows of scales should not be too close together to avoid confusing scales from two different smolt.
2. Improper numbering in the RDA – Take care to ensure numbers on the slides match the data and numbers put into the RDA. Look at the review screen on the RDA if it is believed a mistake has been made.
3. Scales removed from one fish contaminating the scale smear of the previous fish – Wipe the scalpel blade and dissecting probe off between each fish sampled.

DATA REPORTING

The field crew leader will provide all project data to the field project leader at the end of the field season and inseason as designated by the field project leader.

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APPENDIX A. SMOLT IDENTIFICATION

Appendix A1.—Juvenile salmon identification key.

Key to Field Identification of Anadromous Juvenile Salmonids in the Pacific Northwest

By

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ABSTRACT

A key is presented with descriptive illustrations to help in field identification of live, juvenile salmonids in fresh waters of the Pacific Northwest. Other juvenile fish that may be mistakenly identified as salmonids are included.

INTRODUCTION

Species identification of live, anadromous juvenile salmonids is frequently a problem to the field biologist. The purpose of this key is to list and illustrate the external characteristics which will expedite field identification of juvenile salmonids in the Pacific Northwest.

Five species of Pacific salmon (pink, chum, sockeye, chinook, and coho); four species of trout (cutthroat, brown, Dolly Varden, and rainbow or steelhead); and other juvenile and adult fish¹ that may be mistaken for salmon or trout in fresh water are described in this key.

USE OF KEY

The characteristics for identification are listed in a series of alternative statements, some of which are illustrated. To use the key, examine the first statement; if applicable, proceed to the next and continue to successive statements until the species is identified. If a statement is not applicable, pass to the alter-

native characteristics indicated by numbers in parentheses (numbers on the drawings correspond to numbers of statements in the key). Continue in this manner until the specimen is identified. Some external characteristics are positive separating features (marked with asterisk), whereas others are not. Therefore, two or more statements should be considered before final rejection. If a precise identification cannot be made using the external characteristics—and the fish can be sacrificed, a positive identification can usually be made from internal features (marked with double asterisks). A bibliography of keys that utilize more descriptive internal characteristics is included in this paper.

KEY

1. (47) Adipose fin and scales present.
(Fig. 1)
2. (48) Fleshy appendage at base of pelvic fins present.
3. (49) Mouth large, reaching at least to center of eye.

Family Salmonidae

¹ Especially adult smelt, family Osmeridae.

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Appendix A1.—Page 2 of 5.

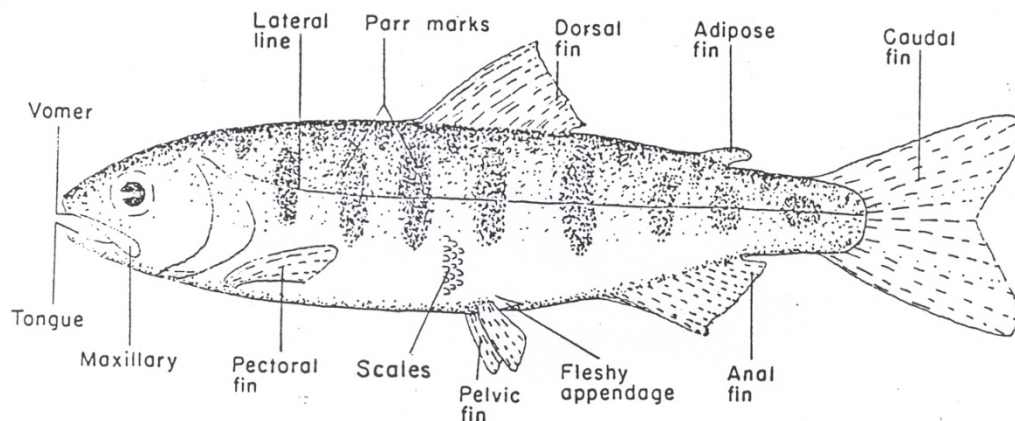


Figure 1.—A hypothetical salmonid showing external characteristics.

4. (17) Anal fin higher than long, with 8 to 12 developed rays (Fig. 2A)
5. (52) *Teeth on head and shaft of vomer. (Fig. 3A)

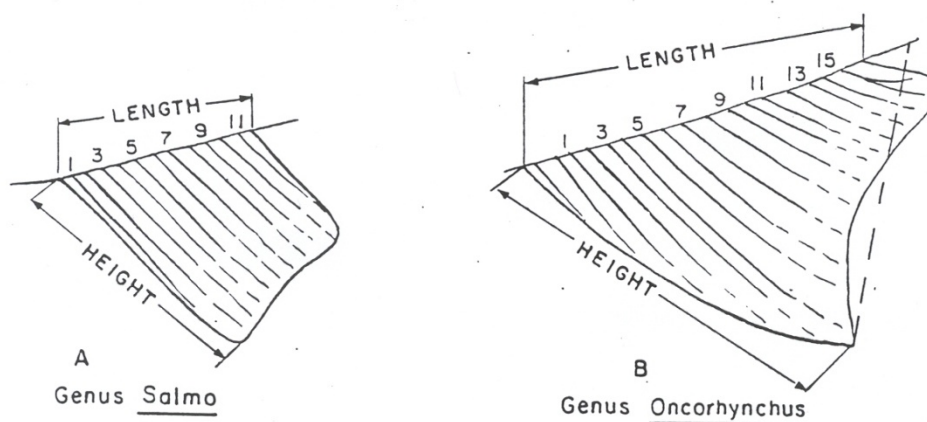


Figure 2.—Anal fins: (A) Trout, genus *Salmo*; (B) Pacific salmon, genus *Oncorhynchus*. The two drawings show differences in structure and fin ray count. (Note that the length of the anal fin is its overall basal length, and its height is that distance from the origin of the fin to the tip of the anterior lobe. In counting fin rays, include only those which originate from the base and terminate at the outer margin of the fin or are half as long as [or greater than] the longest ray.)

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Appendix A1.—Page 3 of 5.

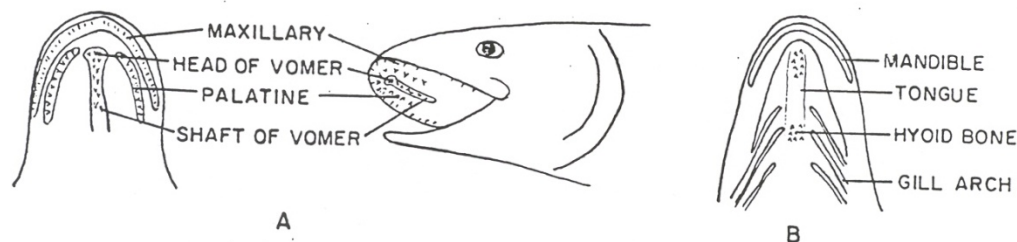
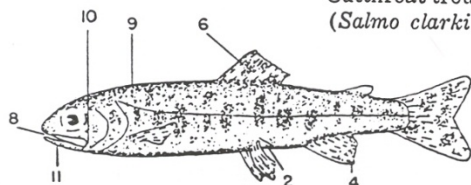


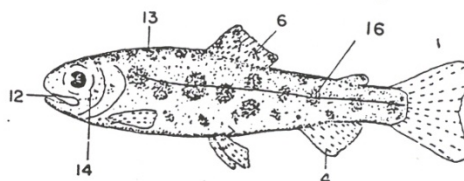
Figure 3.—Location of dentition in (A) the roof and (B) the floor of the mouth of salmonid fishes. (Presence or absence of teeth on the vomer or tongue may be determined by use of the little finger or a blunt instrument. The small hyoid teeth at the base of the tongue are located between the gill arches of the lower jaw and are difficult to find.)

6. (18) Dorsal fin with large dark spots.
Trout
Genus *Salmo*

7. (53) Adipose fin not orange; no row of pale round spots along lateral line.
8. (12) *Small hyoid teeth at base of tongue. (Fig. 3B)
9. (13) Not more than five parr marks on mid-dorsal ahead of dorsal fin.
10. (14) Maxillary reaching past posterior margin of eye.
11. (15) Red or yellowish hyoid mark under lower jaw. Tail usually black spotted.
Cutthroat trout
(*Salmo clarki*)

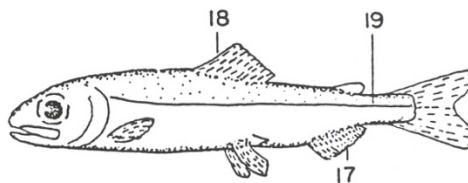


16. (20) Parr marks almost round.
Rainbow or steelhead trout
(*Salmo gairdneri*)



17. (4) Anal fin longer than high, with 13 or more developed rays. (Fig. 2B)
18. (6) Dorsal fin without large dark spots, may be black tipped.
Pacific salmon
Genus *Oncorhynchus*

19. (20) No parr marks. Fry leave fresh water while small—approximately 1.75 inches (45 mm) long.
Pink salmon
(*O. gorbuscha*)



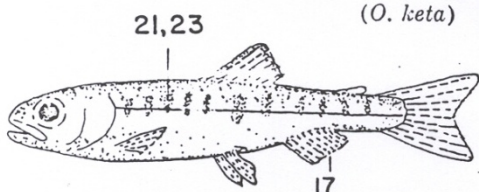
12. (8) *No teeth at base of tongue.
13. (9) Five to 10 parr marks along mid-dorsal ridge ahead of dorsal fin.
14. (10) Maxillary short, not reaching past posterior margin of eye.
15. (11) No hyoid mark under lower jaw. Few or no spots on tail.

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Appendix A1.—Page 4 of 5.

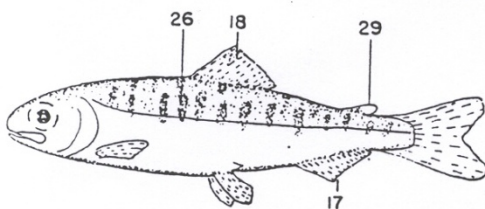
20. (16) Parr marks present as vertical bars or oval spots.
21. (30) Parr marks short, extending little, if any, below lateral line.
22. (25) Gill rakers on first arch, 19 to 26.
** Pyloric caeca, 140 to 186.
23. (26) Parr marks faint. Sides below lateral line iridescent green.
24. (27) Small when migrating from fresh water, approximately 1.5 inches (40 mm) long.

Chum salmon
(*O. keta*)



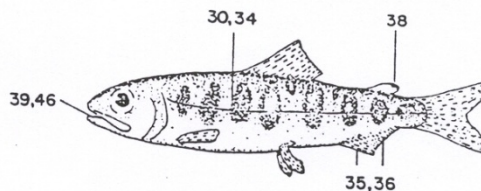
25. (22) Gill rakers on first arch, 30 to 40.
**Pyloric caeca 60 to 115.
26. (23) Parr marks usually sharply defined. Sides below lateral line silvery, not iridescent green.
27. (24) Relatively large when migrating from fresh water, approximately 3 to 5 inches (80 to 126 mm) long.
28. (31) Gill rakers long and slender, more than 29 on first arch.
29. (32) Adipose fin clear, not pigmented.

Sockeye salmon
(*O. nerka*)



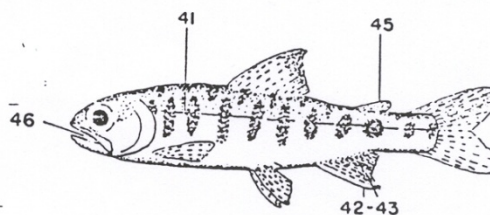
30. (21) Parr marks large, vertical bars centered by lateral line.
31. (28) **Gill rakers short and thick, fewer than 29 on first arch.
32. (29) Adipose fin at least partially pigmented.
33. (40) **Pyloric caeca more than 90.
34. (41) Parr marks broader than interspaces.
35. (42) Anterior rays of anal fin not distinctly longer than rest, not white edged.
36. (43) Anal fin not pigmented.
37. (44) Black spots, when present, on both lobes of caudal fin.
38. (45) Adipose fin not completely mottled, clear area at anterior base of fin.
39. (46) Black gums along base of lower teeth.

Chinook salmon
(*O. tshawytscha*)



40. (33) **Pyloric caeca less than 80.
41. (34) Parr marks narrower than interspaces.
42. (35) Anterior rays of anal fin elongated; when depressed they extend to base of last ray. (Fig. 2B)
43. (36) Anal fin pigmented between rays, resulting in black banding.
44. (37) Black spots, when present, on upper lobe of caudal.
45. (38) Adipose fin completely pigmented.
46. (36) Mouth gray to white.

Coho salmon
(*O. kisutch*)



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47. (1) Adipose fin not present; scales present or lacking.
Not Salmonidae
48. (2) No fleshy appendage at base of pelvic fins.
Smelts
Family Osmeridae
49. (3) Mouth small, not reaching center of eye; teeth weak or absent.
50. (51) Depressed dorsal fin, shorter than head.
Whitefishes
Genus *Coregonus*
51. (50) Depressed dorsal fin, longer than head.
Arctic grayling
(*Thymallus arcticus*)
52. (5) **Teeth on head of vomer only.
Charrs
Genus *Salvelinus*
Dolly Varden (*S. malma*)
53. (7) Adipose fin orange; row of distinct pale round spots along lateral line.
Brown trout
(*Salmo trutta*)

ACKNOWLEDGMENTS

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Figure 1. Juvenile sockeye salmon.



Figure 2. Juvenile coho salmon.

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Figure 3. Juvenile pink salmon.



Figure 4. Dolly Varden.

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Figure 5. Pygmy whitefish.



Figure 6. Coast range sculpin.



Figure 7. Pond smelt.



Figure 8. Stickleback.

APPENDIX B. SMOLT SAMPLING

Appendix B1.—Statistical (sampling) weeks and associated calendar dates.

Week	Calendar Dates	Week	Calendar Dates
10	1-Mar – 7-Mar	28	5-Jul – 11-Jul
11	8-Mar – 14-Mar	29	12-Jul – 18-Jul
12	15-Mar – 21-Mar	30	19-Jul – 25-Jul
13	22-Mar – 28-Mar	31	26-Jul – 1-Aug
14	29-Mar – 4-Apr	32	2-Aug – 8-Aug
15	5-Apr – 11-Apr	33	9-Aug – 15-Aug
16	12-Apr – 18-Apr	34	16-Aug – 22-Aug
17	19-Apr – 25-Apr	35	23-Aug – 29-Aug
18	26-Apr – 2-May	36	30-Aug – 5-Sep
19	3-May – 9-May	37	6-Sep – 12-Sep
20	10-May – 16-May	38	13-Sep – 19-Sep
21	17-May – 23-May	39	20-Sep – 26-Sep
22	24-May – 30-May	40	27-Sep – 3-Oct
23	31-May – 6-Jun	41	4-Oct – 10-Oct
24	7-Jun – 13-Jun	42	11-Oct – 17-Oct
25	14-Jun – 20-Jun	43	18-Oct – 24-Oct
26	21-Jun – 27-Jun	44	25-Oct – 31-Oct
27	28-Jun – 4-Jul	45	1-Nov – 7-Nov

Sampling Procedures

Label Slides

The left portion of each slide should be labeled prior to sampling using a fine point permanent marker with the slide number, species, area sampled, date, and fish numbers of the sample (Figure 1).

Slide number

Write the number of the slide.

Species

Write out completely (e.g., Sockeye).

Area sampled

Write the area where the fish were collected.

Sampling date

The sampling day is the 24-hour period from noon of the first day to noon the following day, and is identified by the calendar date corresponding to noon on the first day.

Fish numbers

Fish should be sequentially numbered, beginning with 1 each sampling event. By starting with 1 each sampling event, it is possible to track how many fish have been sampled. Five fish are placed on each slide.

Slide 001 Sockeye Karluk 5/27/13 Fish #1-5	1	•	•	•	•	5
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•

Slide 002 Sockeye Karluk 5/27/13 Fish #6-10	6	•	•	•	•	10
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•
	•	•	•	•	•	•

Figure 1.–Properly labeled smolt slide.

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Sample ASAP

Sample smolt as soon as possible after they are captured.

Mix anesthetizing solution

Wearing latex gloves to prevent direct exposure to the anesthetic, dissolve a small amount (approximately of 1 g) of Tricane Methanesulfate (MS-222) and baking soda in about 2 L of cold water in a dish pan. The amount of anesthetic needed will vary depending on the water temperature, freshness of the chemical, and size of the smolt.

Set up recovery bucket

Set up an additional bucket of water to be used as a recovery bucket. This bucket should be filled with fresh water, aerated, and covered to avoid stress on the fish.

Transport smolt to sampling area

Transport smolt, using clean 5-gallon buckets, to the sampling area. Buckets containing smolt should be filled with fresh water, aerated, and covered to avoid stress on the fish. Fish can be placed into the bucket using a dip net, or by dipping the bucket into the live box.

Anesthetize smolt a few at a time

Place a few smolt in the anesthetic solution until they become subdued to a point where they can no longer flex their axial musculature but can still ventilate their gills. The concentration of the solution should be such that it immobilizes the fish in 2–3 minutes.

Lightly dry preferred area

After the fish are anesthetized, carefully remove a fish from the dish pan and gently pat dry with a paper towel.

Sample smolt

Place the fish on its right side to sample the left side. Quickly and carefully take length and weight measurements, and remove 5–10 scales from the preferred area of the smolt using a scalpel (Figure 2). On salmon species, the preferred scale is located where a straight line between the posterior insertion of the dorsal fin and the anterior insertion of the anal fin crosses the second scale row dorsal to the lateral line. If scales are not present in this area then scales should be taken from the secondary location, which is the same area on the right side of the fish.

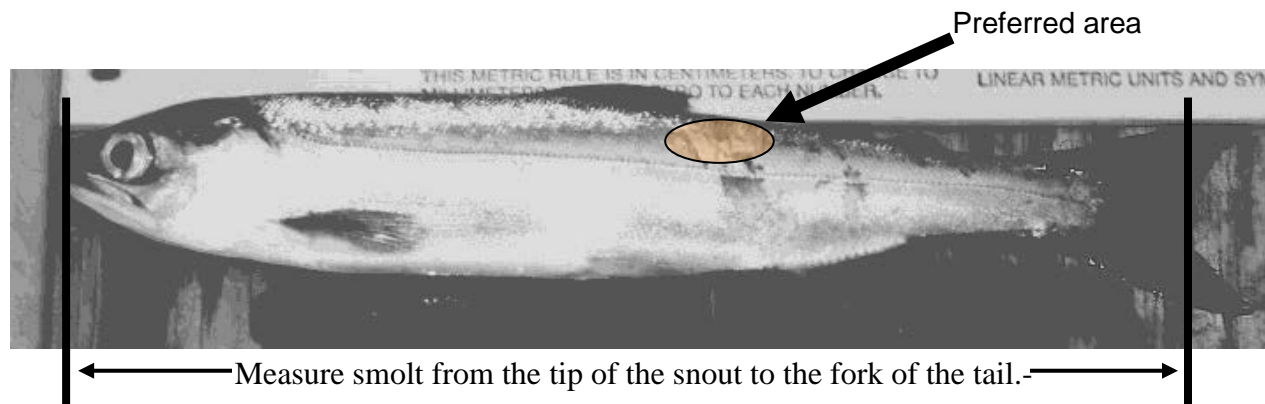


Figure 2.–Smolt with proper length measurement and preferred area highlighted.

Move smolt to recovery bucket

Transfer sampled smolt from the sampling station to the recovery bucket. It is important to sample as quickly as possible and immediately place smolt into the recovery bucket to prevent mortality.

Align scales on slide

Using the dissecting probe, line up and spread out the scales on the slide under the correct fish number (Figure 1).

Clean sampling supplies

Wipe off the scalpel and dissecting probe to remove scales and slime before another smolt is sampled.

Continue sampling

Continue sampling smolt until sampling goals are met, or all available smolt have been sampled. Depending on how long it takes to complete the sample, the water in all buckets (holding, recovery, and anesthetizing) may need to be refreshed.

Release smolt

Once the sampled fish have recovered and are swimming normally in the recovery bucket, they should be released downstream of the trapping location.

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Data Entry/Management

Data obtained while sampling, is recorded using a Meazura Rugged Digital Assistant (RDA). The RDA is a waterproof device used to digitally record sampling data. Sample information is transferred from the device to a netbook after each sample. A USB flash drive is used to save and transfer data from the netbooks located in field camps, to the office, throughout the season. An RDA is shown in Figure 3.

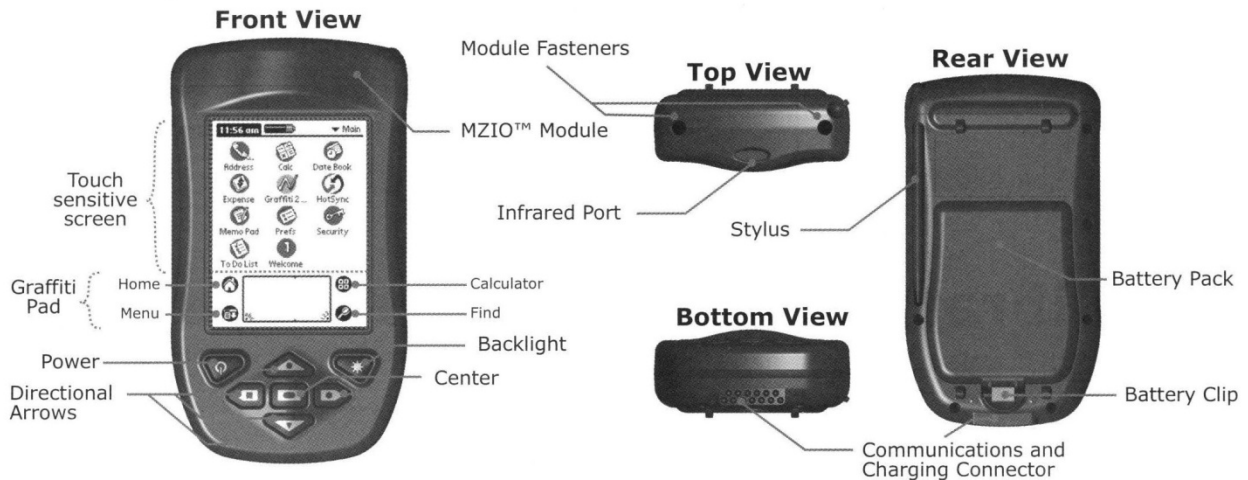


Figure 3.–Rugged Digital Assistant (RDA).

Entering Data Into The RDA

To begin using the RDA, turn it on by pressing the power button (Table 1). Using the stylus, tap the home icon in the bottom portion of the screen to bring up the main menu. It may be necessary to press the home icon several times to bring up the entire main menu. Next, tap the Forms 5.1 icon. Pendragon Forms (Forms 5.1) is the program that you will use to enter all of the sample data. After the icon is selected, the Pendragon Forms screen will appear. If a form was left open by a previous user, it may be necessary to hit the Quit or Done button to get to the main list of forms. Highlight the appropriate sampling form (Smolt_2013.XX) and select New, which is found in the lower left corner of the screen. The four main buttons of the form will now be visible: Enter Background Info, Sample Next Fish, Review, and Quit.




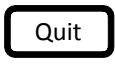
Image	Description
	Power Button - Button you will press on the RDA itself
	Home Icon - Use the stylus to navigate to the home screens
 Forms 5.1	Forms 5.1 Icon - Use the stylus to open pendragon forms 5.1
 Quit	This is an example of a button within pendragon forms. Use the stylus to select these buttons.

Table 1.–Buttons and icons addressed in the text.

Enter Background Info

Background information must be entered at the start of each sampling event. A new day always constitutes a new sampling event, so it will be necessary to enter new background information typically once per sampling day. It is important to edit background information when any change in sampling information occurs. The following topics constitute sampling information. If information in one of the following categories changes, it is necessary to change the background information.

Species

Select the appropriate species from the drop down list on the RDA.

Management Area

Choose the relevant management area from the dropdown list. Samples collected from Kodiak Island statistical areas must have Kodiak selected as the proper management area.

Area Sampled

Select the area that best represents where the fish were sampled, such as Ayakulik River, from the dropdown list.

Location ID (N/A for some areas)

Enter the site where the fish being sampled are from. For Karluk Lake sockeye salmon smolt sampling, Site 1 is the outlet site and Site 2 is further downstream.

Location Type

Indicate the type of area in which the fish were captured.

-continued-

Gear Type

Select the type of gear in which the smolt were caught.



Date of Sample

For smolt, the sampling day is the 24-hour period from noon of the first day to noon the following day, and is identified by the calendar date corresponding to noon on the first day.

Sampler Initials

Enter the initials of the sampling crew (up to 3 persons). This can be done by writing in the box on the bottom of the screen, or by using the pop up keyboard.

Notes

1. When entering text, tap on the dot by the abc icon to bring up a keyboard. 
2. To delete a character, place the stylus in the text box and draw a small straight line from right to left. 

Sample Next Fish:

After entering background information, the RDA is ready to collect individual fish data. The Sample Next Fish button is used to enter the details of each fish sampled. It is not necessary to click on the Sample Next Fish button when entering the first fish of a new sample. After entering the background information, the form automatically knows to go to the sample next fish section of the form. As you continue to sample, simply tap Sample Next Fish or Next to enter individual fish data. This option is used when continuing to the next fish of a sample where no background information has changed. Fish data that is entered here is associated with the current background information logged. The following constitute fish data and should be entered for each fish.

Scale Slide (Card) Number

Slides are numbered sequentially by date throughout the season starting with 1. A separate numbering sequence will be used for each species or major location change. Consult your crew leader for the current slide number. It is crucial to make sure the number written on the slide matches the slide (card) number entered into the RDA. The slide number will automatically advance to next number after five fish have been sampled.

Fish Number

The fish number is a sequential numbering system that begins with the number 1 for each sampling event. This allows samplers to keep track of the number of fish sampled each day (or since the background was changed). By default, the fish number in the RDA will automatically advance after each fish is sampled.

Length in mm

Enter the length of the smolt from tip of snout to tail fork in millimeters (i.e., 108). If for some reason you do not collect a length measurement, enter 999.

Fin Clip and Genetics

Select the Skip Fin Clip and Genetics button if appropriate. If sampling involves fin clips or genetics you can enter the optional fin clip and genetics information.

Sample Next Fish

Select Sample Next Fish to continue sampling.

Review/Edit

The review button can be a very useful tool during sampling. It can be used to ensure data being entered is accurate, or it can be used for editing fish data during a sample. The review portion of the form displays slide number, fish number, length, and weight. The most recently sampled fish appear first. To enter the review screen, tap on the Review button on the main screen of the form. After the data has been reviewed and edited, tap the Done button on the bottom right of the screen to return to the main screen of the form. If Sample Next Fish is selected after leaving the review screen, the auto-increment will continue as if the review screen was never entered.

Reviewing Data

To review the last data entered, tap the Review button on the main screen of the form. Use the scroll bar on the right side of the screen to look at the fish that have been entered.

Editing Data

If fish data needs to be edited, tap on it using the stylus. Tap on the Sample Next Fish button to go through the fish data that was previously entered for that fish. Changes can be made as needed. Buttons chosen prior to the review are highlighted with asterisks. After a fish has been edited, the main review screen appears. If a fish is accidentally selected from the main review screen, click the button that has the slide#-fish# to return to the main review screen without going through the fish data. As mentioned above, tap Done to exit the review portion of the form and return to the main screen.

Quit

When sampling is complete, tap Quit to exit the form.

Data Management

After sampling is done for the day, the data must be backed up on the RDA itself and then transferred (by HotSync) to the netbook.

Backing up data

After each sample the RDA should be backed up so that data is stored on both of the compact flash drives. Turn the RDA on, and tap the home icon in the bottom portion of the screen to bring up the main menu. Tap the CardBkup icon if it is present, and then the Backup Now button at the top left of the screen. The data will now be on both flash drives. If the RDA does not have a CardBkup icon, it will back up automatically.

Downloading Data to Netbook

Connect the communications cable into the RDA and a USB port on the netbook. Press the power button to turn on the RDA and begin a HotSync by tapping the home icon, and then the HotSync icon found on the main menu. Tapping the large icon in the center of the screen will start the HotSync operation (Figure 4). Please make sure the RDA is dry before downloading any data to the netbook.

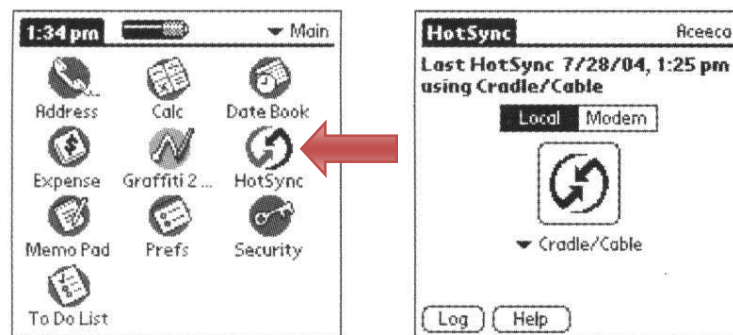


Figure 4.–HotSync Screens Found on RDA.

Editing, Naming, and Saving Data

If a mistake is realized during a sample it is often easiest to document the mistake and send the correction in with the USB flash drive for the Kodiak office to fix. If a mistake is made during the sample it can be changed using the review portion of the form in the RDA. Data can also be changed after it is downloaded onto the netbook, but is not recommended unless the Kodiak office is consulted first. A HotSync operation after changes have been made on the netbook will update the RDA.

To view data, HotSync the RDA and open Pendragon Forms Manager (a shortcut should be located to the right of the start menu) on the netbook. Select the form (Smolt_2013.XX), and click Edit/View under Data Functions on the right side of the window. All data will now be visible. Simply make the necessary minor changes here and exit out of the window to save. It is important to change the correct the numbers under the proper column which is where it is best to consult the Kodiak office. Hotsync the RDA to the netbook after any changes are made on the netbook to update the RDA with all changes.

After data has been edited and verified, a copy of the database will need to be exported from the Pendragon software and saved on the netbook. In Pendragon Forms Manager under Data Functions on the right side of the window, click To ASCII. Navigate to the folder in which the data is being saved. Type in the file name and then save. The file name should follow this format: Area_Sampled_Smolt_YYYYMMDD.csv (e.g., Upper_Station_Smolt20130614.csv). After saving, a window will pop up stating the file has been created. Each .csv file will contain all of the data that has been collected up to that point in the season. Do not edit or save the .csv file as an excel file or it will be difficult or impossible to upload the data into the database.

Transferring Data from Netbook onto USB Flash Drive

Up to date data should be sent into the main office as often as possible (e.g., with the grocery plane). Insert a USB flash drive into an appropriate port on the netbook. Double click on MyComputer, which is found on the desktop of the netbook. Navigate to the folder where your data is saved and highlight the most recent file (determined by the date) by single clicking. With the file highlighted, click on edit at the top of the window and then copy. Open up MyComputer and double click on the USB flash drive (often called “Removable Disk”) found under the heading “Devices with Removable Storage.” Click on edit at the top of the window, and then paste. The .csv file that was copied earlier will appear in the window indicating it was copied to the flash drive. Exit out of all windows and single click on the safely remove hardware button on the bottom right corner of the desktop in the quick start menu. Click on “Safely remove USB Mass Storage Device.” A pop-up will verify that it is now safe to remove the flash drive from the system.

Powering the Netbook and RDA

1. The RDA can be charged with either the AC or DC powering options. It is the crew leaders responsibility to keep it charged
2. The netbook can only be charged with the AC power adaptor, therefore plan accordingly for generator use. The charging light on the netbook is red when charging, and green when fully charged.
3. If there are powering problems, please contact the office immediately.

Some Notes and Reminders

1. Connect the AC adaptor to the bottom of the communications cable to charge the RDA batteries. If using the DC charger, connect the charger into the communications port.
2. If a mistake is noticed before moving onto the next fish, the previous button can be used to make changes in the RDA without having to go to the review screen or alter the data on the netbook.
3. Each length, weight, and scale must correspond to a single fish! It is the responsibility of the crew leader to be sure the data has been entered correctly.
4. Never put data from different dates onto one slide, and always enter new background information. Even if only one fish is sampled that day, enter new background information and begin with a new slide the next day.
5. Responsibility for accuracy lies first with the primary data collector(s) and finally with the crew leader. Sloppy or incomplete data or slides will be returned to individual collectors for correction.
6. Ensure that all equipment is well kept. Electronics should be stored in a clean safe place. The RDA must be completely dry before transferring data to the netbook. RDA batteries must be charged to make certain sampling is not hampered. It is the responsibility of the crew leader to make sure that all data is carefully examined and before returning it to their supervisor.

Troubleshooting

Resetting the RDA

If problems are encountered with the RDA, a soft reset can be done without losing data. To perform a soft reset hold the power and backlight button down together, and release at the same time. If a soft reset does not work, the office should be contacted about other options for resetting.



Press and release Power and Backlight button together

Hotsync Error Message

HotSync message "Exceeded user storage space limit of 500KB in form 'Smolt_2013.XX'

1. Open Pendragon Forms Manager
2. Under Form Function click on "Properties"
3. Click on "Advanced Properties"
4. Click on the "Synchronization Tab"
5. Change the Storage Limit (KB) to 5000 instead of 500.
6. Click "OK"
7. Under Form Functions Click on "Distribute"

CC: Loewen, Keyes, Moore